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## Combating the Threat of Crime in the Security of the Bauchi Local Government Area Using Geospatial Technology

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### ABSTRACT

The dynamics of crime and its nature expose the State to the security threat. The types of criminal activities perpetrated within the communities, including armed robbery, kidnapping, and car and motorcycle snatching, are rapidly increasing. These crimes have threatened security in Bauchi Local Government and hence the need to check by providing relevant information using modern technology. The geospatial technique combined with the Key Informant Interview approach was adopted to evaluate the intensity of insecurity in Bauchi LGA; from the data collected and analysed, it was established that criminal activities are increasing in various areas leading to the rapid increase in crime hotspots. As a result, the security agency needs to improve the nature of its functionality in combating crimes. Despite the fact that 70.35% of the security agency outpost are functional while 29.62% of the Outpost are non-functional, the security agency recorded 1081 crimes in 2020, which increased to 1142 crimes in 2021 and 1640 in 2022. Also, looking at the 645,000-population density of Bauchi LGA and the ratio of security personnel to individuals of 1:3581, which need to meet the United Nations standard of a ratio of 1:450. Given this, it was recommended that the State create job opportunities and skill acquisition training for unemployed youth roaming the streets. The security agency needs to develop a new strategy for combatting the security threat using geospatial technology and frequent production of security threat maps and their mitigation.

### INTRODUCTION

Crime is any unlawful act of deliberate omission which constitutes an offense punishable by a state or other authority. Crime may constitute a danger, violence or threats to the life and properties of the populace. The criminal activities are numerous and include but are not limited to Human slaughter, armed robbery, kidnapping, drug trafficking, car and motorcycle snatching and other offenses specified by the State. The rise in criminal activities worldwide has been a thing of concern. The resultant effect of such activities has led to deterioration in the environment, human development and a shortage in food security. However, new concerns about this value as well as the current prevalence of security difficulties directly affecting society, have pushed it to the top of the safety priority list. In the previous years, there has been a significant increase in violent conflict and crimes in various settings, including towns, farms, streets, road businesses, places of worship, and homes. Surprisingly, institutions of learning are not left out. The prevalence of this violence is not unique to Nigeria but is a global problem (UNICEF, 2015).

According to Eme and Anthony (2011), it is no longer news that Nigeria is vulnerable to a variety of security threats, including assassinations, electoral violence, youth militancy in the Niger Delta, oil theft, kidnapping and hostage-taking, the National Union of Road Transport Workers (NURTW) crisis, and the Boko Haram crisis in the North (Albert, 2013). Communities are no longer secure for people in some parts of the country, following

the recent crime perpetrated, such as stealing property and kidnapping and adopting people. Failure to address and tackle this threat results in ensuring that the development agenda through the education goal of Nigeria never sees the light of day. The rationale is not far-fetched: efficient learning can only occur in a safe, secure, and supportive atmosphere (Aly & Chris, 2021).

According to the Vanguard News (August 15, 2021), abduction for ransom had steadily become the norm of the day in Nigeria since April 2014 when Boko Haram militants snatched 276 schoolgirls from their dormitories in Chibok, Borno State of Nigeria. The research confirmed by police and eyewitness accounts eventually reported by the media indicates that 111 kidnappings occurred in Nigeria between January and mid-August 2021. This is alarming

In recent years, Nigeria and its northern region have faced various security challenges: stealing, kidnapping and adoption by bandits, violent extremism organisations (VEO) and terror groups motivated by money). Bauchi LGA is not an exception in this, given the trend in the kidnapping and adoption case of Abubakar Sadiq on April 2nd, 2019. A 15 years old boy who was adopted by their neighbour in Bauchi Town and demanded ransom but was later killed, and Adamu Muhammad (popularly known as Yaya) March 25th, 2020, who happened to be the Governor's elder brother and other kidnapping incidents that occurred between September and October 2021. The tragedy of Hanifa Abubakar, kidnapped on December 5th, 2021, for ransom and ultimately slain by

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her Teacher, was a viral story on social media. So also other stories of kidnapping and abduction. However, most kidnappings and abduction incidents go unreported. Richard (2021) states that around 10–20% of such incidents are reported, while the remaining 80–90% are not documented. Bauchi metropolitan relies on security agencies to offer optimum protection in its particular area by sending troops around. In the recent kidnapping and robbery situations, the presence of security guards is felt after the incident rather than during it.

According to a report released on December 17th, 2021, by SBM Intelligence, an average of 13 persons were abducted every day in Nigeria in the first half of 2021, highlighting how prevalent and daring the criminal conduct has become. This discovery comprised six geopolitical zones: South-West, Southeast, South-South, North-Central, North-East, and North-West, as well as the Federal Capital Territory, FCT, Abuja. The pattern of abduction remained consistent in the North, where victims were frequently abducted in large numbers from rural communities and schools. The mass kidnapping of highway commuters has emerged as another operation model used by increasingly daring shooters.

According to investigations, state and federal governments have strongly criticised the attack following each mass abduction, with vows to free abductees. Without a clear strategy for combating the problem, which has expanded throughout the country, authorities and individuals pay large sums to kidnappers (Ford *et al.*, 2015). With the rise in security threats, geospatial techniques and Key

Informant Interviews are catch-all terms for various approaches that security agencies can use to map and analyse the distribution of security personnel across an area and crime hotspots and monitor the security challenges in a location of interest.

Geospatial Technique is a combination of Geographic Information Systems and Remote Sensing technology. GIS is a set of tools and processes that interact with geographical data and are utilised in analysis and decision-making. It is required in many areas, from the government to the general public, business to social care, and science to the military. Bolstad (2012) has defined GIS as a computer-based system to aid in the collection, maintenance, storage, analysis, output, and distribution of spatial data and information. GIS offers advanced analysis tools and comprehensive data packages for community proximity analyses to security facilities in the event of an emergency as well as demographic information (Shoman *et al.*, 2018). Remote sensing is the acquisition of information about an object or phenomenon without physical contact with the object, in contrast to in situ or on-site observation. Key informant interviews are qualitative in-depth interviews with people who know what is happening in the community. This is a useful way of capturing softer data using a set of pre-prepared but not rigidly applied open and closed questions. The purpose is to collect information from a wide range of people, viz; community leaders, professionals, or residents and others with firsthand knowledge about the community.



Figure 1: 21 Safety and Security Rules this Season

Spatial distribution analysis will provide the security agency with detailed information about areas that are most vulnerable to security threats by displaying the inter-visibility, descriptive picture, and location in order to improve and enhance the level of security in such areas and also provide solutions to the problems of kidnapping and abduction that have been trending in the country at large.

In this work, the geospatial technique was used to deploy security personnel to vulnerable areas by analysing the spatial distribution of mobile force and agency personnel across the study area for compliance with national security agency directives on personnel deployment to secure and enhance the safety of communities within the LGA, and also tackle kidnapping activities in the study area.

**METHODOLOGY**

This study's overall methodology used a combined approach of quantitative and qualitative data collection with spatial GIS applications and Analysis:

**Quantitative**

This study looked at various quantitative approaches using different procedures to gather useful information on the crime hotspots. Numerical data were obtained and evaluated with the help of statistical information to ascertain the facts surrounding social processes. Included in the study are descriptive and correlative research methods. In 25 crime hotspot experiments, closed-ended questionnaires were used, and the results were recorded.

**Quantitative**

In this study, contextual analysis, content, and topic techniques were used to reach out to many key stakeholders. Individual interviews, focus groups, and observations of the 25 selected crime hotspots were also conducted. A phenomenological study design was used, in which participants shared their experiences. Additionally, it was ethnographic, and the community leaders and knowledgeable security officers served as the major informants.

**Application of Remote Sensing and GIS**

In all 25 crime hotspots identified in Bauchi Metropolis, handheld GPS was used to collect geometric data (locational coordinate of the crime hotspot) the data collected were further validated and exported to ArcGIS 10.7.1 environment for security threat analysis, proximity analysis and "Nearest Neighbor Analysis" (NNA) and the result are displayed in thematic maps and charts respectively. The step-by-step strategy adopted in the process of implementing the field work is as follows; reconnaissance (field and office), data collection (primary

and secondary data were collected), recording, data analysis and presentation.

**Study Area**

the study area. Bauchi Local Government Areas (LGA) in Bauchi Central Senatorial District, Bauchi State, Nigeria. It is geographically located between latitude 10°15'26.23" and 10°16'30.25" North of the equator and Longitude 9°46'36.32" and 9°47'44.94" east of the Greenwich meridian. Bauchi Local Government has a population of 493 810 people and a surface area of around 3 687 km<sup>2</sup> (NPC. 2008).

Figure 2 Shows the Maps of the study area Bauchi State (Hausa: Jihar Bauchi) is a Nigerian state in the North-East geopolitical zone, bordered on the North by Kano and Jigawa, on the south by Taraba and Plateau, on the east by Gombe and Yobe, and on the west by Kaduna. Bauchi is the area's fifth-largest city and seventh-most populous in Nigeria, with a population of about 6,530,000 in 2016. The State is divided geographically between the drier, Semi-desert in the West, Sudan savanna in the south and the dried semi-desert Sahelian savanna in the North, with a tiny portion of the highland Jos Plateau in the southwest.

Yankari National Park is a large wildlife park in southern Bauchi State that contains large populations of waterbuck, African buffalo, patas monkey, hippopotamus, roan antelope, and western hartebeest, as well as some of Nigeria's last remaining West African lion, African leopard, and African bush elephant populations is a critical defining feature of the State's landscape.

The people of Bauchi state are: the Bolewa, Butawa, and Warji in the central region; the Fulani, Kanuri, and Karai-Karai in the North; the Fulani and Gerawa in and around Bauchi; the Zaar (Sayawa) in the south; the Tangale in the southeast; and the Jarawa in the southwest have all lived there for many years.

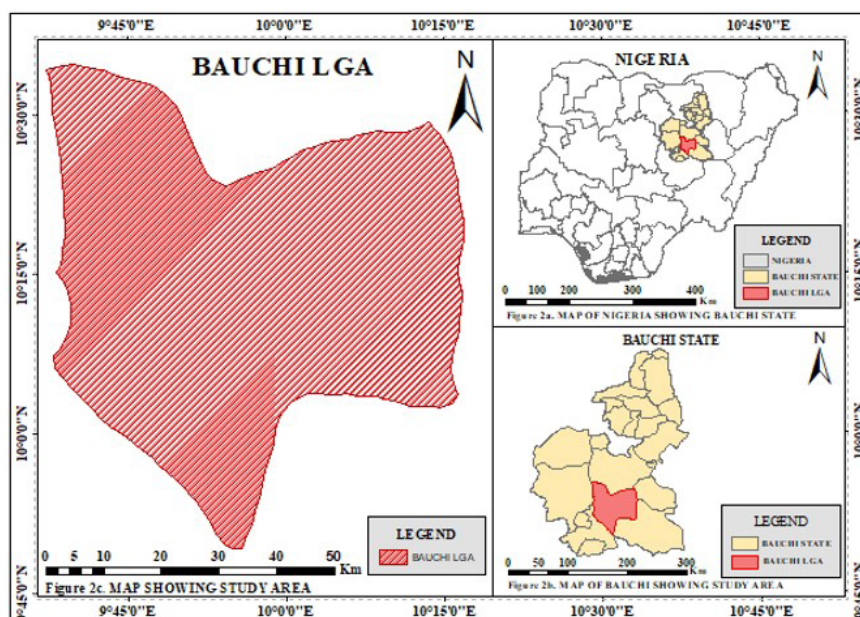


Figure 2: Maps of Bauchi Local Government, Bauchi State and Nigeria

### Sources of Data Requirements

Two methods were used to collect the data which are primary and secondary approaches:

#### Primary Data

The primary data, are data sourced from the field that depicted geometric location of the different police station within the metropolis and the points where abnormal activities are being carried out that harbour criminals within the communities using Handheld Geographical Positioning System (GPS) as a tool for data collection.

#### Secondary Data

Satellite images of the area were downloaded from Google Maps. The satellite images were used to identify and extract the relevant features. Attribute information about these base stations was collected from the telecommunication service operators. The data included the following:

1. The names of the various crime hotspot and security agency posts or stations.
2. The address and location of the crime hotspot and security agency post or station.
3. The study area contains a large number of crime hotspots and security agency posts or stations.
4. Ownership and characteristics of each facility.

#### Data Acquisition

This is the process of gathering, recording and measuring/observing data on variables of interest in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes. The processes of data collection/acquisition in surveying and geoinformatics include:

1. Reconnaissance
2. Recording
3. Observation and measurement

#### Reconnaissance

Reconnaissance is planning and cursory examination of the entire project for proper execution. This is the first and most crucial stage in any survey work. It requires the researcher to visit the study area to get familiar with its features and take note of possible difficulties encountered during the work. There are two types of reconnaissance: office and field reconnaissance

#### Office Reconnaissance

Also known as the planning stage; it involves making the necessary arrangements and preparation of work to be done to ensure the proper execution of the project and obtaining the relevant materials used in its execution. Some of the materials to be obtained are:

1. The study area map was obtained from SAS Planet, USGE, and Terra Incognita.
2. Information about the location and characteristics of the communities were obtained from the Bauchi State security agency, while information on the Crime Hotspot

Areas and security posts were obtained from security agencies.

3. The extent of the study area.

#### Field Reconnaissance

A reconnaissance survey was carried out to give the researcher information on the location of the Communities, crime hotspots and a security agency post or station in the metropolis. Other relevant information and attribute data will be obtained by visiting the Communities, crime hotspots and security agency stations using a handheld GPS receiver and interacting with some stakeholders using a Key Informant Interview (KII).

#### Data Processing

The following steps were employed:

#### Image Georeferencing

The high-resolution image of the area (0.5m) was georeferenced with the aid of ground control points by creating a geographical coordinate system using zone 32 WGS 1984 (Bauchi metropolis is in Zone 32 on the Universal Traverse Mercator) to facilitate geospatial processing and analysis. ArcGIS 10.3.1 software was used for the georeferencing and digitising exercises. The following procedures adopted in the georeferencing exercise are:

- I. The arc map software was launched from the desktop.
- II. On the arc map desktop, the arc catalogue was launched, and the folder where the image was to be stored was connected to the arc catalogue.
- III. On the arc map desktop, the "Add Map" button was clicked, redirecting the user to the folder where the image was to be stored.
- IV. After the image had been added to the arc map, spatial reference was added to the image (projected coordinates: world-UTM-zone 32).

The image georeferencing was appropriately done by clicking on the georeferencing tab and clicking the add control tab (where four evenly distributed ground control points coordinates were added to the image). The image was then geo-registered by creating a geographical coordinates system using zone 32 North of Minna data to facilitate geospatial processing and analysis.

#### Regular Inspection of Community Premises

The importance of regular community inspection by security agencies to uncover strange objects must be considered. Security men and assigned stakeholders must move around the community premises once or twice a day to discover if criminal activities or strange objects will be discovered. If strange objects or unusual signs are observed, they should be reported as soon as possible to the concerned authority.

The location of crime hotspots and security agency stations in the communities, the database was imported into the ArcGIS environment, and the data containing the relevant vector shapefiles were checked in the ArcGIS

environment to create a visual map of point and polygon feature classes. The X and Y coordinates of the facilities automatically displayed the locations of all the base stations on the map. This shows the distribution of the facilities across the study location.

The coverage of the crime hotspots and security agencies' stations were examined to identify areas with a security presence using the required techniques and approaches that enable the researcher to achieve the goals. However, geospatial and statistical techniques were adopted, and security agency stations in the study area were buffered based on viewshed analysis. A Key Informant Interview (KII) was used to collect data from stakeholders to ascertain the level of security problems that face the environment. Data were collected from the stakeholders regarding the frequent occurrence of crime, enhancing security deployment, and improving community safety.

The spatial pattern of the location of the crime hotspot and security agency stations in the study area, ultimately, the vectorised map of the study location was imported, and all the relevant shapefiles were spatially overlaid. Subsequently, the proximity analysis and "Nearest Neighbor Analysis" (NNA) inferential statistical tool in ArcGIS 10.7.1 was computed to establish the spatial pattern that may exist in the data.

### Data Analysis

Nearest Neighbor Analysis explores patterns in the location data by comparing the mean distance (Do) of the phenomena in question to the same expected mean distance (De), usually under a random distribution.

The query tool was used to examine the national security agency regulation for the deployment of security personnel to specified set standards to meet the stipulated regulatory distance of security agencies agreed upon among the communities in the study area. A query can be a way to get exact information from a map or database. In ArcMap, one can perform a query using the identifier button on the toolbar for simple querying or the query builder, depending on the situation. Because the database to be developed will contain the minimum distance from

each mast to the following residential building obtained during the fieldwork, a geographic query was run to identify which communities are vulnerable under the defined standard of security agencies' deployment of security.

The findings were displayed on a map and in a table, highlighting regions likely to face security threats. During the fieldwork, relevant information on the proximity analysis within the setback distance was gathered, and a database was created.

## RESULTS AND DISCUSSION

### Results

#### Functional Police Division and their Outpost

**Table 1:** Function Police Division in Bauchi LGA

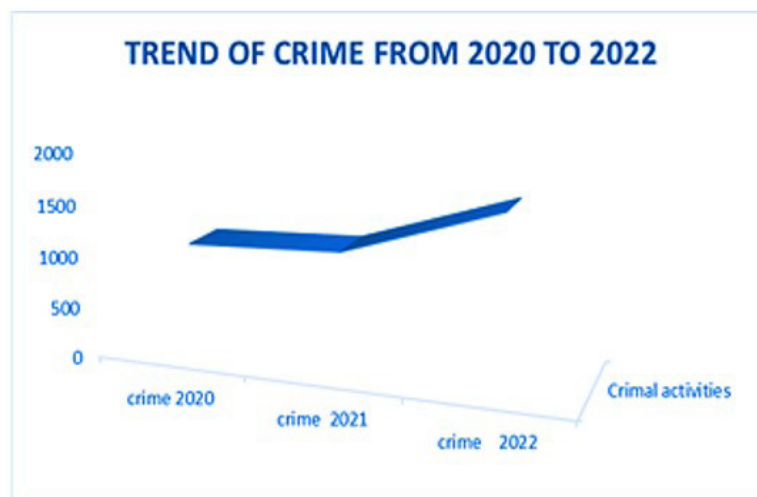
Police station and Outpost	Functional station	Non Functional station
A' Division and Outpost	5	1
B' Division and Outpost	5	2
C' Division and Outpost	4	0
D' Division and Outpost	2	1
E' Division and Outpost	2	4
Headquarter and Outpost	1	0
<b>Total</b>	<b>19</b>	<b>8</b>

#### The Trend of Criminal Activities

**Table 1:** Function Police Division in Bauchi LGA

Year of crime	2020	2021	2022
Kidnapping	17	21	25
Armed robbery	680	730	885
Motorcycle snatching	370	380	721
Car snatching	14	11	9
<b>Total</b>	<b>1081</b>	<b>1162</b>	<b>1081</b>

Bauchi LGA (Population, 2018)	Ratio
645,000	3581:1



**Figure 3:** A Map showing the spatial distribution of the police division, outpost and crime hotspots within the Bauchi Metropolis

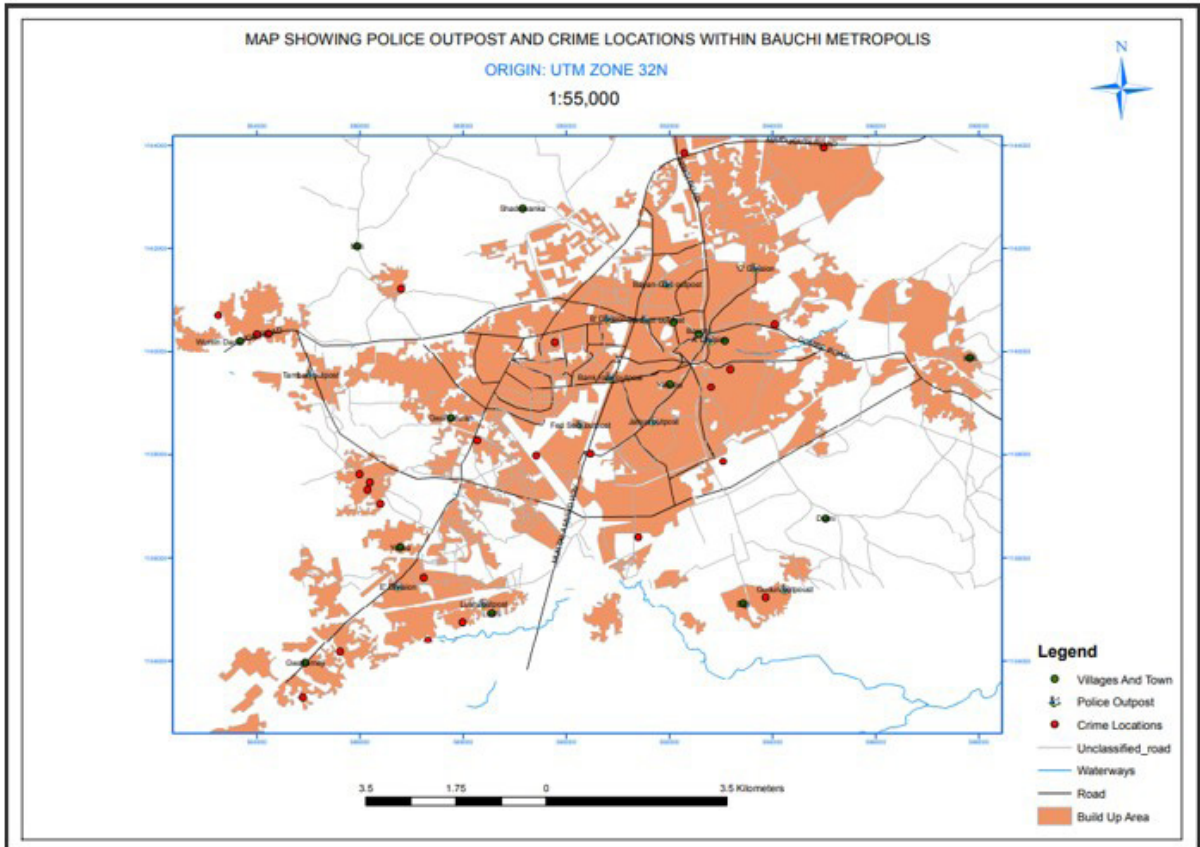


Figure 4: A Map showing the spatial distribution of the police division and their Outpost with Bauchi Metropolis

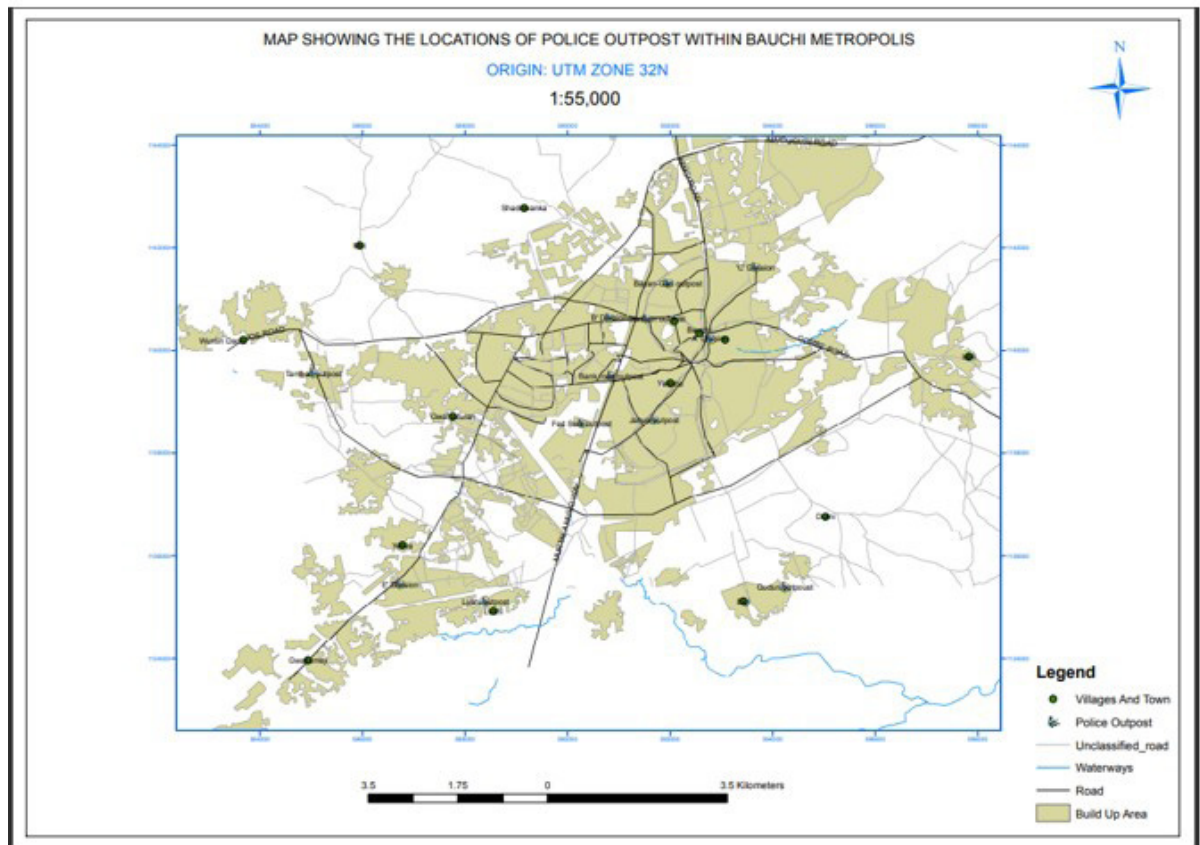


Figure 5: Composite map showing the level of Vulnerability of some communities base on the clusters of the crime hotspot in relation to the police station

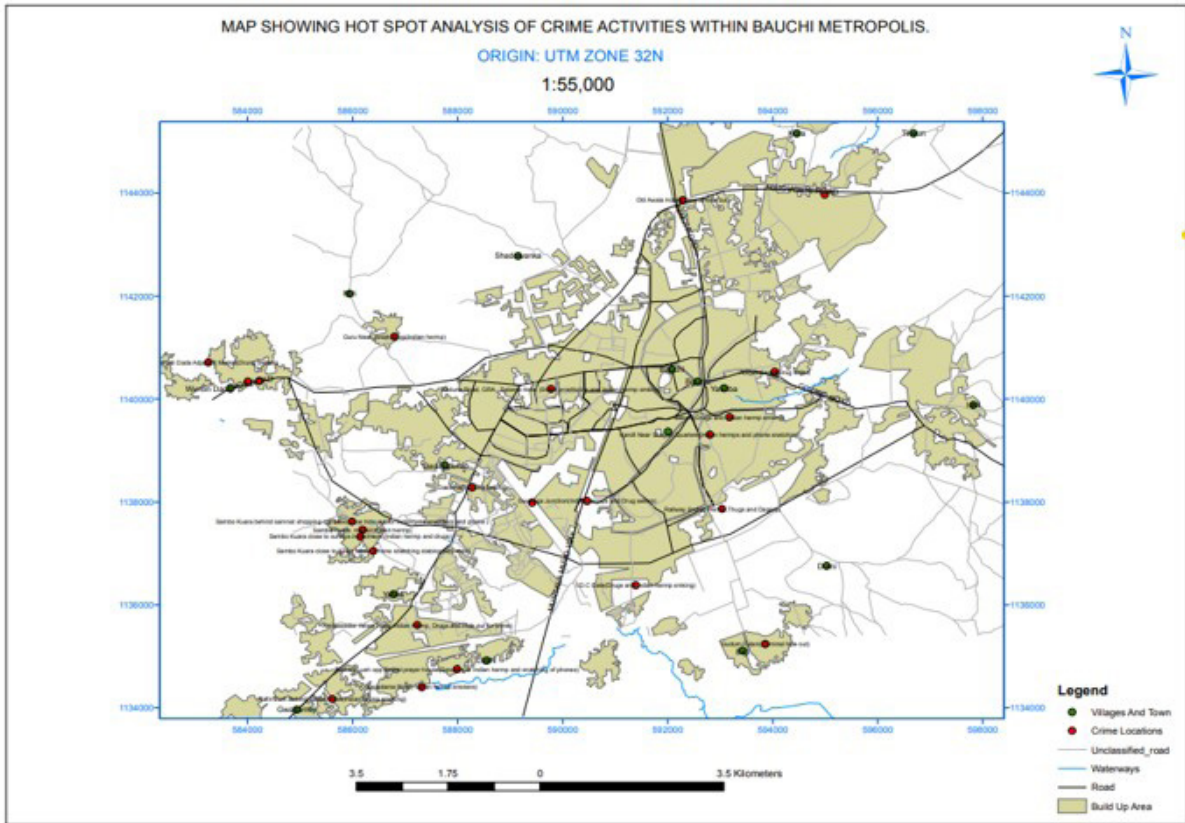


Figure 6: Map showing the location of crime hotspot

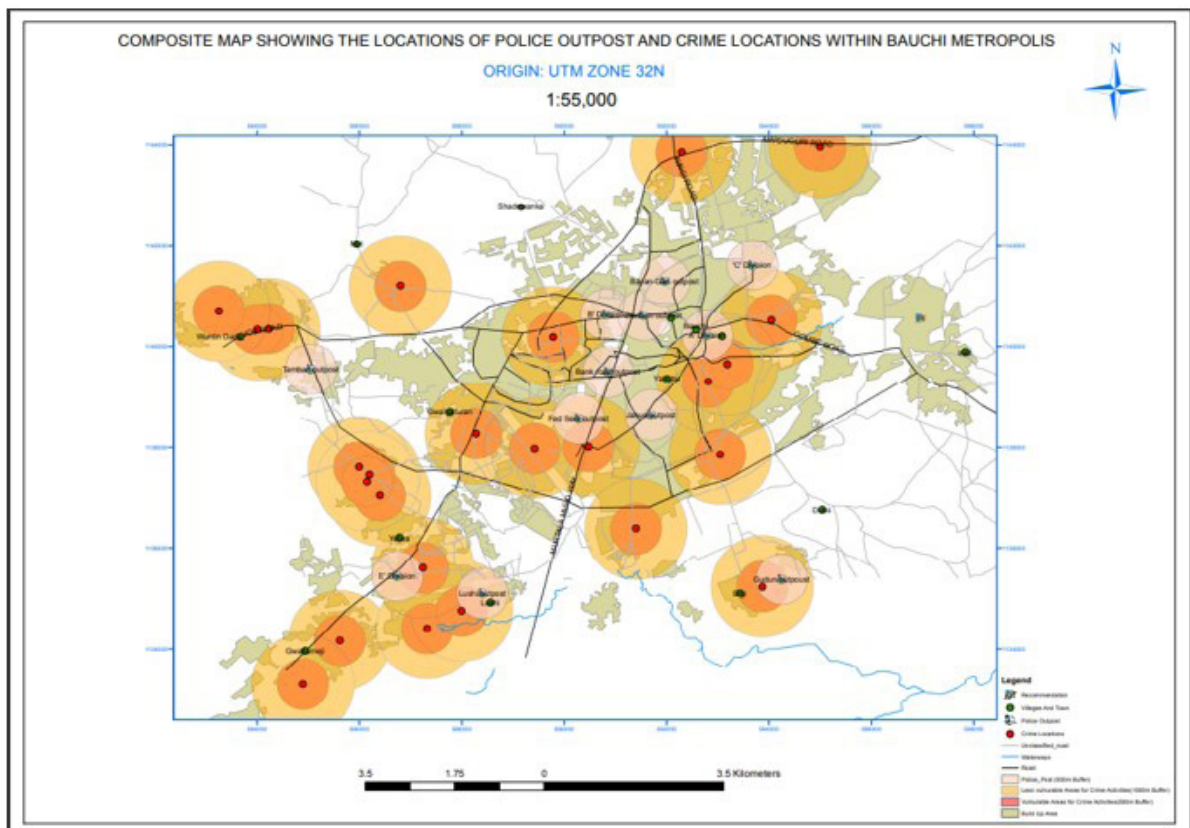
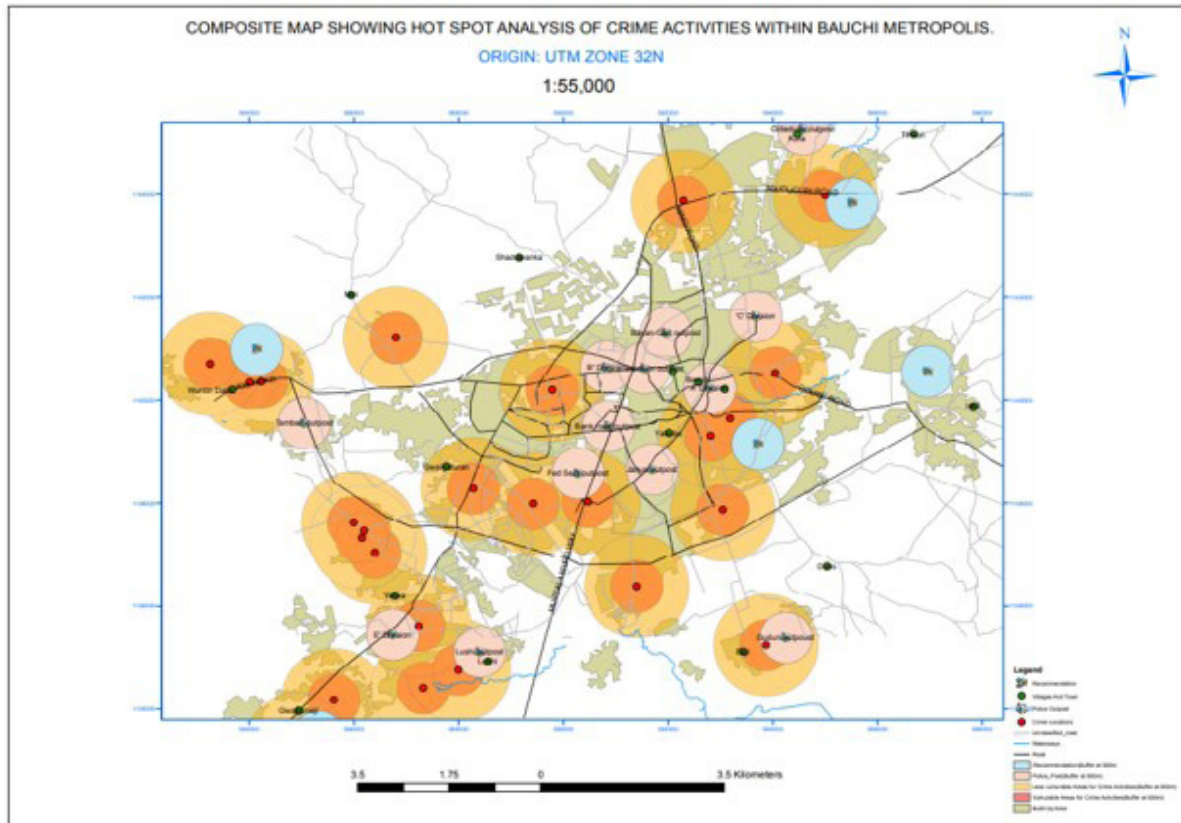


Figure 7: Composite map showing the buffered location of Police outpost and crime hotspot



**Figure 8:** Composite map showing the buffered location of Police outpost recommended police outpost and crime hotspot

## DISCUSSION

### The dynamics of crime and security of Bauchi

Security and safety of life have been challenging issues in the northeast, and Bauchi has no border with states that are experiencing security issues or seriously facing many problems. Bauchi has a record of harbouring and being used as a hiding place for criminals, bandits, terrorist groups, VEOs like Boko Haram and ISWAP members. Although there were no active terrorism camps, between 2012 to 2015, terrorism groups such as Ansaru, Matasinai, and another group of Boko haram tried to establish their camps in places like Toro, Dass, Ningi and Alkaleri LGAs of Bauchi state. Nigeria's military and Department of State Security Service (DSS) combined efforts flushed them out of the State.

In the past three years, Bandits are gradually finding their foot in the State. There have not been massive attacks on locals, but they have engaged in a series of kidnap which has forced some individual to relocate from their homes and villages to communities in the urban city that are safer. The activities of bandits are prominent in Toro, Ningi and Alkaleri LGAs; also, kidnapping has been prominent in LGAs like Bauchi, Tafawa Balewa, Toro, Ningi, DASS, Ganjuwa, and Kirfi. Most communities in the State are vulnerable because aside from the Local government headquarters, all other places in the LGAs are ungoverned. There is no presence of conventional security, a lack of access roads, a poor communication

network, and an extended response time.

Table 1 shows the functionality of police divisions and their Outpost within Bauchi LGA; 70.35% of the outposts are functional with personnel on duty, while 29.62% of the outposts within the LGA are non-functioning and considering the most functional division base on hierarchy Division A= 26.32%, B=26.32%, C=21.05%, D=10.53%, E=10.53% and also looking at the Vulnerability of the Division base on hierarchy C= 0.00%, A=12.50%, D=12.50%, B=25.00%, E=50.00%. Looking at the vulnerability data provided, division E needs to catch up to the workforce, followed by Division B. The two-division outpost community may experience security threats because they need more personnel. Their functionality will be based on discretion, so most communities could be good hideouts for criminals.

### Ratio of Policemen to Population

The population density of people in Bauchi Local Government was compared using police (personnel) distribution and population distribution, as shown in the table below, using a simple ratio approach. Based on the United Nations standard, the ratio of population to one police is 450:1. Adopting the United Nations standard, the result showed that Bauchi was vulnerable in terms of security proportionality; there will be a need for security personnel and human resources because the workforce is inadequate.

According to the crime classification trend recorded with security agencies in the State, 17 persons were Kidnapped in 2020, and the incident occurred within the two-month interval. In 2021, 21 persons were abducted on average within three months intervals, and in 2022, 25 persons were kidnapped within an average four-month interval. The armed robbery activities include snatching bags/phones, breaking into houses, robbing on the roads and streets etc.; in 2020, 2021, and 2022 security agencies recorded 680,730,885 robbery activities, respectively, on an average of 2/day intervals. Similarly, the motorcycle snatching crimes record in 2020 was 370 on average of 1/day, and in 2021, it was 380 on average of 1/day, while in 2022, it was 721 on average of 2/day. Car snatching in 2020 was recorded at 14; in 2021, it was recorded at 11; and in 2022 was recorded at 9.

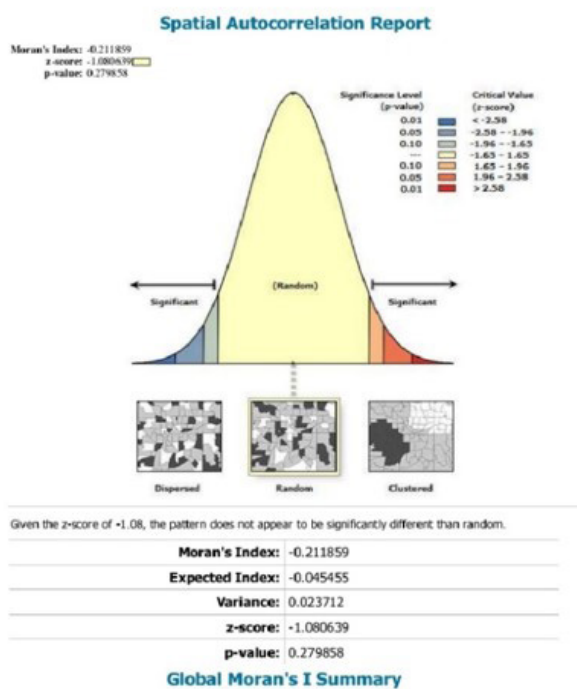
Recently, the rate at which crime is committed is at increased. From 2020 to 2022, the data shown indicate a tremendous increase in crimes; the acts' perpetrations result from an increase in crime hotspots, which are typically considered hideout places for criminals. Following the trend of criminal activities, from 2020, crime is rated (1081) at 27.98%. In 2021 there was a

slight increase in crimes (1142), 29.56%, while in 2022, Bauchi experienced a rapid increase in criminal activities with (1640) 42.45%. Such activities include armed robbery, car snatching, kidnapping, and motorcycle snatching. Motorcycle snatching is increasing as criminals adopt different strategies to rob their victims of their motorcycles.

Kidnapping is prevalent at Mararaba, Inkil, and Turum. Motorcycle snatching is prevalent at Mararaba, Bakaro, Gudu Hausawa, Gudu Seyawa, and Turum. Burglary is prevalent at Gwallameji, wunti Dada, Gudum area, Gombe road, Fadama Mada, Inkil, etc. Such criminal activities have been perpetrated on average every day. According to the security agencies interviewed in December 2022, most crimes are undocumented because they are not reported.

### Geospatial Security Technology Used by the Security Agencies

The chart above shows the crime hotspot distribution level around communities within the Bauchi LGA. The low Pi-value and Zi-value represent crime hotspots, and the low Zi-value and the huge Pi-value represent the hotspot's loop cluster and their impact on the communities.



OBJECTID	SOURCE_ID	GIZScore	GIPValue	
1	1	584227	-2.58024482	0.009873029
2	2	584005	-2.58024482	0.009873029
3	3	583253	-2.567745811	0.010236219
4	4	586797	-1.955621076	0.050509808
5	5	593039	2.896551728	0.003772884
6	6	592805	2.751105097	0.005939458
7	7	590466	1.711515235	0.086986041
8	8	593861	2.062915626	0.039120645
9	9	594038	2.360860087	0.018232608
10	10	594991	2.009190472	0.044516938
11	11	585614	-1.52471223	0.12733089
12	12	588276	-0.914984384	0.360199838
13	13	592288	2.009190472	0.044516938
14	14	593177	2.744154944	0.00606669
15	15	591395	2.000816463	0.045412173
16	16	584893	-1.472519247	0.140880713
17	17	589780	0.429265091	0.66773032
18	18	589417	0.759830363	0.447355997
19	19	587319	-1.741831621	0.081537912
20	20	587991	-1.313811947	0.188909496
21	21	587236	-2.091623211	0.036472234
22	22	586396	-1.771323328	0.07650695
23	23	586191	-1.638008794	0.101419859
24	24	585992	-1.638008794	0.101419859
25	25	586148	-1.638008794	0.101419859

Figure 9: Statistical analysis that shows the level of communities Vulnerability

### Dynamics of Geospatial Analysis of Crime Hotspot

The geospatial analysis shows the nature of Police station outpost distribution in relation to crime hotspots. Looking at the dynamics of crime in Bauchi LGA, the analysis shows the level of clusters of crime hotspots, the random and dispersed nature of the crime hotspot, and their impact.

In most cases, people close to the crime hotspot tend to be vulnerable compared to those far away. However, irrespective of the hotspot location, criminals will still

carry out their activities in their preferred location or choice.

### Discussion of Findings

The result shows that 70.35% of the divisional police outposts are functioning with 5-6 personnel on duty, while 29.62% of the outposts within the LGA need to be fixed. Looking at the hierarchy of non-functionality and the dynamics of crime trends over the years shows some community vulnerability due to an inadequate workforce,

which leads to adherence to the United Nations standard of police ratio to the population to protect the life and properties of citizens. The mode of police operations in recent times have a concern because most divisions have no standard of operation or posting of men; it is usually based on discretion and demand.

Security agencies still need to adopt geospatial approaches to risk/security assessment. However, provision has been made at the headquarter, but such technologies installed at the police ICT unit need to be fixed. Intelligent units such as State Intelligent Bureau (SIB), Zonal Intelligent Bureau (ZIB) and Federal Intelligent Bureau (FIB) could have used such technological devices for combatting security challenges in Local Government areas, State and Federal levels, respectively.

There is a rapid increase in criminal activities within Bauchi LGA due to the non-spatial distribution of security agencies. Looking at the crime rate growth, if drastic measures are not taken, then with time, no place will be safe. Suppose the agencies adopt a geospatial approach to monitor the crime hotspot. In that case, it will help curb the insecurity problem, and also, the personnel posting should be at an outpost one diameter interval which will help in curbing the crime rate.

## CONCLUSION

The rapid increase in crime hotspots is a threat to the security of Bauchi LGA. Geospatial and Key Informant Interview approaches were adopted to evaluate the intensity of insecurity and crime hotspots in Bauchi LGA. The findings have helped to establish that criminal activities are at increase due to the rapid increase in crime hotspots and the nature of the security agency functionality. Based on the findings, in 2020, the security agencies had 1081 crimes recorded, while in 2021 recorded 1142 crimes, and as of 2022, the record has tremendously increased to 1640, and this is the result of the nature of the security agency mode of operation. Although 70.35% of the security agency outpost are functional while 29.62% of the Outpost are non-functional, also looking at the population density of Bauchi LGA (645,000) and the ratio of personnel to individuals 3581:1. The criteria do not meet the United Nations standard of police ratio 450:1.

## RECOMMENDATIONS

Based on the findings, the following recommendations were made:

There is a need for the Bauchi state government to create job opportunities and skill acquisition training for unemployed youths in the streets. This positively impacts by reducing the crime rate within the LGA because poverty and lack of job opportunities among the youths are major triggers of these acts.

More so, there is an urgent need to increase the security agencies' workforce. Based on the United Nations standard, Bauchi LGA does not meet the criteria because the population density of the State is more than the

number of police personnel ratio to citizens; having more of the security personnel will help to reduce the rate of crime perpetrated within the State at large.

There would be a need to deploy modern technology in combatting crimes considering the rapid increase in criminal activities within the State, knowing full well that security agencies have Intelligent Units such as the State Intelligent Bureau (SIB), Zonal Intelligent Bureau (ZIB) and Federal Intelligent Bureau (FIB), having GIS knowledge and adopting geospatial approaches will help in producing maps of areas that may be threatened and further devise the appropriate mitigation approach to curtail the crime.

Installation of Closed-Circuit Camera: community management can acquire Closed-circuit cameras. No amount of money is too much to guarantee the security of lives. This camera can be used to monitor the criminal activities of visitors and other stakeholders in the community. This will help prevent evil acts like planting bombs, kidnapping, rape, etc.

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